



Grant Guyuron, CFA, Senior Managing Director

The Basics of Blockchain and Crypto Currencies

BY GRANT GUYURON, CFA, SENIOR MANAGING DIRECTOR

Technology is not my strong suit. I'm technically a millennial, and I like to think I'm somewhat savvy when it comes to using devices; however, the reality is that I know nothing about coding and next to nothing about the technology that supports said devices. This article is an attempt from an investment standpoint to explain a technological innovation that may have a profound impact on the industry and our clients.

You have likely read or heard about Bitcoin, a crypto currency that is being used in the exchange of goods and services. Bitcoin is able to operate because of the creation of blockchain technology, which enables anonymous digital payment between two parties. Crypto currencies are one of many potential applications for this technology – the financial services sector is drooling at the idea of streamlining transaction data and other processes.

What is blockchain technology and how does it work?

At its core, blockchain technology is a way to organize and capture data in a decentralized and secure way. The data exists on a network of devices or "nodes," which makes tampering with the data challenging and time-consuming. As new data is added (e.g. a transaction at a bank or an exchange between crypto currency users), a "block" is added to the existing chain that is recorded, encrypted, and saved. The initial block in the chain is called the "genesis block." The chain will continue to grow as new data is added over time and serves as a permanent ledger. The sequence is as follows¹:

Hartland's 2nd Annual Women's Luncheon

On Friday, October 20th, HEELS will sponsor the second annual Women's Luncheon at The Country Club. The program will feature Jackie Acho, Ph.D., President of The Acho Group, as the keynote speaker. Jackie has an impressive resume, with formal education in chemistry and work experience in strategic consulting and finance. Her dedication to the empowerment of her community has placed her on the boards of many organizations, including JumpStart, Inc., the Urban League of Greater Cleveland, and the Generation Foundation of Cleveland. At the luncheon, Jackie will share her thoughts on women in leadership. New to the luncheon this year is a musical interlude by Anna Rathbun (soprano) and Donna Lee (piano). Anna is a Senior Research Analyst with Hartland. This program is a collaboration of the women in HEELS, and every detail of the event will have the thumbprint of its members.

Registration begins at 11:30 am

Program begins promptly at 12:00 pm

The Country Club
 2825 Lander Road
 Pepper Pike, OH 44120

Please send your
RSVP by October 13th
 to Jennifer Lucas at
jlucas@hartland.com or
 (216) 621-1090

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Once the data is added to the chain, it becomes part of the public domain on a distributed ledger and is designed so that it is nearly impossible for it to be altered or corrupted. This feature is central to the protection of users of crypto currencies.

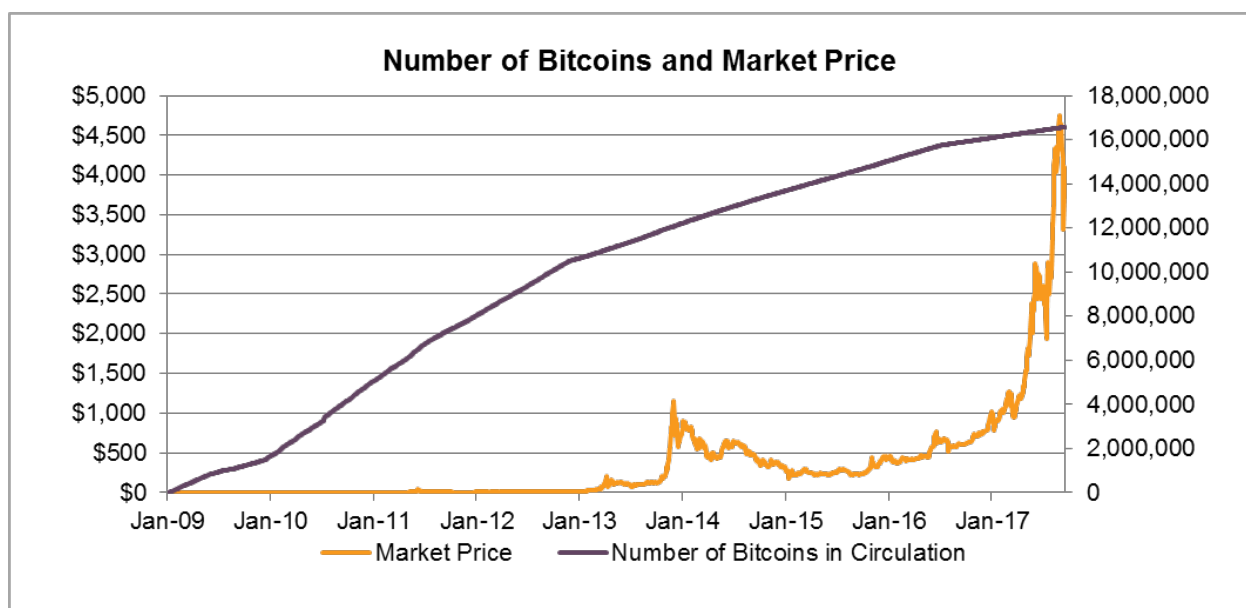
What are crypto currencies and how do they work?

Crypto currencies are digital currencies that have no intrinsic value, no physical form, and are not controlled by a central bank (e.g. the Federal Reserve). Examples of crypto currencies that you may have heard of are Bitcoin and Ethereum. For the purpose of this article, we will focus on Bitcoin, the largest crypto currency in the world. The 1,097 crypto currencies in existence as of 8/31/17 had a market value of approximately \$171 billion, of which Bitcoin makes up \$77.5 billion².

Bitcoin utilizes blockchain technology to document the transfer of the digital currency (Bitcoins) between its users. Each user has a Bitcoin wallet with a balance that can be used for the exchange of goods and services – users purchase Bitcoins with currencies such as the U.S. Dollar. The blockchain ensures that Bitcoins are originating from the spender and are legitimate. To protect the users and the integrity of the blockchain, each transaction has a digital signature called a private key. Transactions are then confirmed by the network through a process called mining, which relies on mathematical calculations from computer hardware by Bitcoin miners. These miners collect fees for validating transactions and are awarded with Bitcoins as well (12.5 bitcoins per completed block, most recently)³. Crypto currencies are especially attractive for people living in countries where local currencies have high inflation.

Valuation and skepticism

Perhaps the most confusing thing about Bitcoin is how to value it. Bitcoin and other crypto currencies have no intrinsic value, but they have appreciated in price because of scarcity and the perceived value of the underlying technology. As of 8/31/17, each Bitcoin was worth \$4,688, with 16.5 million coins outstanding, which equated to a market cap of \$77.5 billion⁴. The number of Bitcoins has grown considerably over time – so too has the price.



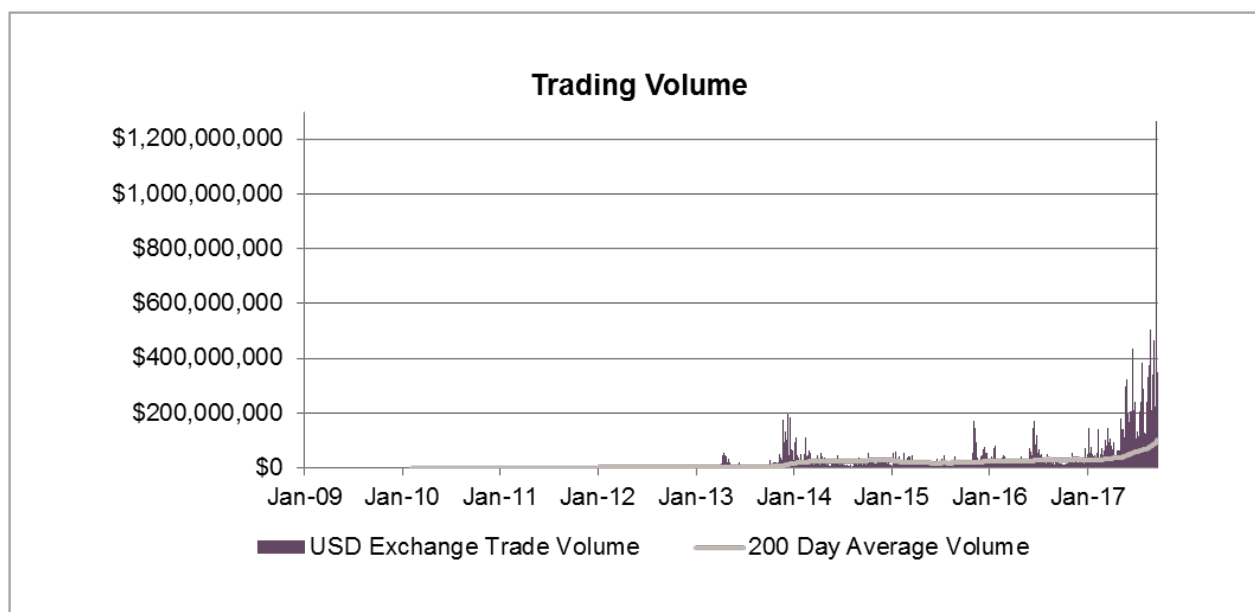
Source: Blockchain.com

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Though the currency is designed to facilitate the exchange of goods and services between consumers, it has not stopped speculative trading, which led to exponential growth in its price and a significant increase in volatility as of publication of this article. Through September 20th, 2017, Bitcoin “speculators” have been rewarded with returns of 299% year-to-date, 594% over the last year and 732% over the last three years; however, the market has experienced significant volatility in recent weeks as the price of a Bitcoin dropped approximately 30% over a two-week period and subsequently recovered 16.5% of its value.

As seen in the chart below, trading volume was essentially \$0 per day until July 2010 but has picked up meaningfully in recent years, with a 200 day average volume of over \$80 million at month-end in August. Volume spiked on September 15th approximately \$1.3 billion in a single day as Bitcoin’s price rebounded \$454 from its recent low.



Source: Blockchain.com

Current volatility of Bitcoin’s price coincides with comments from skeptics in the financial services community, such as J.P. Morgan’s Jamie Dimon and Oaktree Capital Management’s Howard Marks. Mr. Dimon believes that Bitcoin “will eventually blow up” and Mr. Marks labeled it “an unfounded fad.” In the same week, the Wall Street Journal published an article regarding Chinese authorities shutting down the country’s Bitcoin exchanges⁵.

An additional concern about Bitcoin includes how the digital currency is being used. While Bitcoin may have positive attributes to users in currency zones with high inflation, there are negative possibilities that cannot be ignored. Bitcoin and other virtual currencies could be used to facilitate criminal activity related to drugs, human trafficking, or terrorism, among others.

Hartland’s two cents (0.00001 Bitcoins)

Blockchain technology is intriguing to the financial community because of the numerous applications that could improve efficiency, reduce cost, and potentially strengthen security. PriceWaterhouseCoopers estimates that reinsurers alone could save \$5-10 billion through utilization of blockchain⁶. We are in the early days of the development and use of this technology, but it may play a factor in the profitability of the financial services industry in the future.

Likewise, crypto currencies have attracted enormous attention and provide some benefits to those who utilize them. From an investment standpoint, crypto currencies have no intrinsic value, which makes it nearly impossible to value from our perspective. As such, we are not recommending that our clients invest in crypto currencies at this time.

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While it is unclear what will become of Bitcoin and if it will survive as a currency, blockchain technology is likely to have a meaningful impact on the financial industry. At Hartland, we will continue to follow this story, and, who knows, maybe I will write a follow-up article touting our expertise in this space...but I won't speculate on that.

Sources:

- (1) Blockgeeks.com
- (2) CoinMarketCap.com
- (3) Bitcoin.com
- (4) Worldcoinindex.com
- (5) Wsj.com: *China to Shut Bitcoin Exchanges*
- (6) PwC *Blockchain: The \$5 billion opportunity for reinsurers*

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MARKET BENCHMARK RETURNS

September 30, 2017		1M	3M	12M	YTD
US Large Cap	S&P 500	2.1%	4.5%	18.6%	14.2%
US Small Cap	Russell 2000	6.2%	5.7%	20.7%	10.9%
Developed Intl	MSCI EAFE	2.5%	5.4%	19.1%	20.0%
Emerging Intl	MSCI Em Mkt	-0.4%	7.9%	22.5%	27.8%
Real Estate	NAREIT	-0.6%	1.2%	3.6%	6.7%
Core Fixed	BarCap Agg	-0.5%	0.8%	0.1%	3.1%
Short Fixed	BarCap 1-3Yr	-0.1%	0.3%	0.7%	1.1%
Long Fixed	BarCap LT G/C	-1.0%	1.5%	-0.8%	7.7%
Corp Debt	BarCap Corp	-0.2%	1.3%	2.0%	5.1%

Source: Bloomberg

The performance data shown represent past performance. Past performance is not indicative of future results. Current performance data may be lower or higher than the performance data presented.